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ABSTRACT

The United States Training and Emplcyment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict jcb performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate cnly for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is also included. (AG)

ED 063410

TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

MANAGER, RETAIL FOOD (ret. tr.) 0-72.21

-B-502-
S-225

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U. S. Employment Service
in Cooperation with
Pennsylvania and Michigan State Employment Service

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GATB # 2382

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

MANAGER, RETAIL FOOD (ret. tr.) 0-72.21

B-502

Summary

The General Aptitude Test Battery, was administered to two samples of workers employed as Manager, Retail Food 0-72.21 for the purpose of validating and cross-validating test norms for this occupation. The table below shows the year in which data collection was completed and the number included in each final sample.

Sample	Year	N
Validation (Pennsylvania)	1961	61
Cross-Validation (Michigan)	1962	82

The criterion consisted of supervisory ratings. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data, and their combined selective efficiency, Aptitudes G-Intelligence, P-Form Perception and Q-Clerical Perception were selected for inclusion in the final test norms. ..

GATB Norms for Manager, Retail Food (ret. tr.) 0-72.21.

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
G	CB-1- H CB-1- I CB-1- J	110	G	Part 3 Part 4 Part 6	105
P	CB-1- A CB-1- L	95	P	Part 5 Part 7	95
Q	CB-1- B	100	Q	Part 1	100

Effectiveness of Norms

The data in Table IV-A indicate that 16 of the 24 workers, or 67 percent of them, did not achieve the minimum scores established as cutting scores on the recommended test norms. This shows that 67 percent of the poor workers would not have been hired if the recommended test norms had been used in the selection process. Moreover, 31 of the 39 workers who made qualifying test scores, or 80 percent, were good workers.

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Manager, Retail Food, 0-72.21.

II. Validation Sample-Pennsylvania

The GATB, B-1002A, was administered during the period December 1960 to June 1961 to a total sample of 61 male workers employed as Manager, Retail Food 0-72.21 by LoGlaw, Inc. Pittsburg, Pennsylvania. All workers in the sample are considered experienced workers. As a Manager, an individual receives 128 hours of formal training. A high school education is desirable but not mandatory for qualifying for Manager training. All managers are selected from within : workers advance from Store Clerk to Head Clerk, and from Head Clerks to Managers.

Cross-Validation Sample-Michigan

The GATB, B-1002B, was administered during the period September 5 to September 26, 1961 to a sample of 101 male workers employed as Manager, Retail Food 0-72.21 by various Wrigley Stores in Michigan. 18 workers were eliminated from the sample because they lacked the necessary experience and one worker was eliminated because his right hand was physically handicapped. The final sample consisted of 82 men. Tests had not been used in the selection of workers for employment in this occupation at Wrigley Stores. Applicants must be 21 years of age and it is assumed that they have completed high school. The minimum training period required for successful performance of all job duties is 12 months.

TABLE I-A

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

Validation Sample

N = 61	M	σ	Range	r
Age (years)	34.5	7.1	21-53	-.059
Education (years)	11.9	1.5	8-16	.191
Experience (months)	51.9	58.6	2-352	-.081

TABLE I-B

Cross-Validation Sample

N = 82	M	σ	Range	r
Age (years)	37.1	8.4	24-62	-.131
Education (years)	11.7	1.8	8-16	-.118
Experience (months)	81.2	61.1	12-307	.128

III. Job Description

Job Title: Manager, Retail Food (ret. tr.) 0-72.21

Job Summary: Directs the operation of one store of a national chain of self-service retail food markets profitably and in accordance with over-all organization policies. Determines merchandise needed and requisitions and purchases, checks deliveries of, and plans display of such merchandise. Verifies or adjusts prices. Hires, trains, and supervises subordinates. Maintains good customer relations. Prepares financial and other reports and records.

Work Performed: Requisitions dry groceries, perishables, premium merchandise, hardware, dry goods, electricals and produce from central warehouse. Makes frequent check of merchandise on shelves and floor of store and stock rooms to determine merchandise required and fills out order forms for needed items. Gives completed order forms to truck driver making deliveries or mails them to office, where size of order and propriety of ordering certain items are checked by the central warehouse manager and/or by main office operations staff in light of previous sales records of the store.

Purchases needed quantities of various grocery and other items from vendors calling at the store. As requisitioned or purchased merchandise is delivered, checks load against duplicate order form. Reorders out-of-stock items, and notes current prices.

Plans and assists in arrangements of grocery, produce, and stampbook and premium certificate merchandise displays: Using predetermined sequence of shelf space for various types of food, supervises arrangement of can, package, and premium merchandise on shelves, counters, and tables in an orderly and attractive manner, and/or personally sets up displays. Advises and assists produce man in displaying produce.

Verifies and adjusts prices by means of prices indicated on bills for incoming merchandise and price-change lists dispatched from main office, and makes certain that every price shown and/or stamped on merchandise for sale is currently correct. Adjusts prices on produce where necessary, according to size, weight, freshness, and saleability.

Hires, trains and supervises subordinates: Selects, hires and schedules checkers, produce clerks, store clerks, and other personnel required, with the approval of the store supervisor. Trains workers in company policies and regulations, sales methods, checking procedures, arranging grocery, produce and premium merchandise displays and reading scales. Supervises and assists workers in unloading trucks, unpacking and storing merchandise, stamping prices on merchandise, checking purchases, taking cash, making change, packing merchandise, maintaining the store premises under clean and sanitary conditions, and in other related duties necessary to store operations. May discharge subordinates for cause.

Maintains good customer relations: Listens to customer complaints concerning situations such as inability to secure scarce food items, incorrect prices on merchandise, employee discourtesy, and overcharges. Makes adjustments and grants requests where possible, or tactfully explains reasons for inability to correct situation in such a manner as to retain customer good will. Watches for and attempts to eliminate pilfering or shoplifting by customers, without arousing undue antagonism or incurring possibility of legal action for false accusation.

Checks and prepares daily cash receipts for deposit: Makes periodic pick-ups of money from checkers' registers through the day. Takes readings from all registers at the close of business each night. Checks readings against cash receipts and checker daily balance sheet, and checks stamp and premium certificate books against premium merchandise receipts. Sets aside bank for registers and for necessary cash disbursements, prepares deposit slips, and places money and deposit forms in safe ready for periodic pick-up.

Prepares and maintains reports and records: Prepares daily sales tally, weekly-time and payroll record, report of registers averages, bank deposit slips, various order blanks, reports of outside vendor, and various other records.

IV. Experimental Battery

All the tests of the GATB, B-1002A, were administered to the Validation sample group. All the tests of the GATB B-1002A, were administered to the Cross-Validation sample group.

V. Criterion

Validation Sample-Pennsylvania

The criterion consisted of supervisory ratings made on a descriptive rating scale. Two sets of ratings were prepared by the workers immediate supervisor. The first ratings were prepared during the period March 23 to April 10, 1961. The second ratings were prepared during the period April 23 to June 1, 1961. The correlation between the two sets was .516. Since the reliability was low and the first set of ratings was significantly related to the variable of experience, the second set of ratings which showed no significant relationship with the variables age, education or experience was used as the final criterion. The distributions of the final criterion scores ranged from 22-45, with a mean score of 32.197 and a standard deviation of 4.968.

Cross-Validation Sample-Michigan

The criterion consisted of supervisory ratings made on a descriptive rating scale. Two sets of ratings were obtained during the period September 7 to November 8, 1961. These ratings were prepared by the District Managers. There was a time interval of at least two weeks between the first and second ratings. A correlation coefficient of .89 was obtained between the two sets of ratings. Therefore, the final criterion consisted of the sum of the two rating scale scores for each worker. The distribution of the final criterion scores ranged from 32-88, with a mean score of 61.098 and a standard deviation of 12.074.

VI. Qualitative and Quantitative Analyses

A. Qualitative Analysis:

The job analysis indicated that the following aptitudes measured by the GATB appear to be important for this occupation.

Intelligence (G) - required to direct operation of self-service retail food market profitably and in accordance with over-all organization policies; to requisition or purchase store merchandise; to verify and adjust prices of merchandise; to interview, hire and train new employees in company policies and procedures; to plan and direct work assignments; to maintain good employer-employee relationships and customer relations; to prepare required reports; and to plan and assist in arrangement of merchandise in orderly and attractive manner.

Verbal (V) - required to understand, interpret, and carry out instructions, orders and policy directives from central authority; and to present information, ideas and directives accurately and clearly to subordinates.

Numerical (N) - required to prepare financial reports, adjust prices, compute inventory losses and make change; to check and prepare daily cash receipts for deposit; to prepare bank for registers and necessary cash disbursements; to prepare weekly time and payroll records; and to compute percentage ratio of store receipts to determine staff requirements.

Clerical (Q) - required to check merchandise on shelves and floor of store and stockrooms; to prepare order forms; to check billing prices and totals; to check deliveries against duplicate order form; to ascertain completeness of order and reorders out-of-stock items; to verify and adjust prices indicated on bills for incoming merchandise and price-change lists; to check every price shown or stamped on merchandise for sale to make certain it is currently correct; to take reading from registers and check readings against cash receipts and Checker Daily Balance Sheets; and to check stamp and premium certificate books against premium merchandise receipts.

B. Quantitative Analysis: Validation Sample

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 61

Aptitudes	M	σ	r
G-Intelligence	109.2	12.4	.563**
V-Verbal Aptitude	103.0	13.6	.520**
N-Numerical Aptitude	110.7	13.1	.349**
S-Spatial Aptitude	104.8	17.8	.239
P-Form Perception	106.0	16.1	.392**
Q-Clerical Perception	108.3	14.4	.376**
K-Motor Coordination	108.0	15.6	.062
F-Finger Dexterity	98.2	17.8	.251
M-Manual Dexterity	113.3	17.4	.051

**Significant at the .01 level

C. Selection of Test Norms: Validation Sample

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	x	x	x			x			
Irrelevant									
Relatively High Mean	x		x			x			x
Relatively Low Sigma	x	x	x			x			
Significant Correlation with Criterion	x	x	x		x	x			
Aptitudes to be Considered for Trial Norms	G	V	N		P	Q			

Trial norms consisting of various combinations of Aptitudes G,V,N,P and Q with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of G-105, P-95 and Q-100 had the best selective efficiency.

VII. Validity of Norms

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 39 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV-A shows the relationship between test norms consisting of Aptitudes G, P and Q with critical scores of 105, 95 and 100, respectively, and the dichotomized criterion for Manager, Retail Food 0-72.21 for the Validation sample. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV-A

Validity of Test Norms for Manager, Retail Food 0-72.21
(G-105, P-95, Q-100)

Validation Sample

N = 61	Non-Qualifying Test Score	Qualifying Test Scores	Total
Good Workers	6	31	37
Poor Workers	16	8	24
Total	22	39	61

Phi Coefficient = .51
χ^2 = 16.055
P/2 < .0005

The data in the above table indicate a significant relationship between the test norms and the criterion for the Validation sample.

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Table IV-B shows the relationship between test norms consisting of Aptitudes G, P and Q with critical scores of 105, 95 and 100, respectively, and the dichotomized criterion for Manager, Retail Food 0-72.21 for the Cross-Validation sample. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV-B

Validity of Test Norms for Manager, Retail Food 0-72.21.
(G-105, P-95, Q-100)

Cross-Validation Sample

N =82	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	25	30	55
Poor Workers	20	7	27
Total	45	37	82

Phi Coefficient = .27
χ^2 = 5.978
P/2 < .01

The data in the above table indicate a significant relationship between the test norms and the criterion for the Cross-Validation sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes G, P and Q with minimum scores of 105, 95 and 100, respectively, have been established as B-1002 norms for Manager, Retail Food 0-72.21. The equivalent B-1001 norms consist of G-110, P-95 and Q-100.

IX. Determination of Occupational Aptitude Pattern

A significant relationship between OAP-12 of the existing 35 OAP's (revised 10/61) and the criterion for the experimental sample was obtained. The proportions of the sample screened out by OAP-12 was .30, which is within the required range of .10 to .60. Therefore the occupation of Manager, Retail Food 0-72.21 has been incorporated into OAP-12.